

ON TARGET

THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY • A DEPARTMENT OF ENERGY FACILITY

JLab director discusses
upcoming reviews

The latest on DOE's
Spallation Neutron Source

BigBite magnet
will feed Hall A research appetite

Keppel named to lead
Hampton University medical
instrumentation center

Funk heads center of excellence; focuses on research, safety

by James Schultz


There are no surfboards propped up against his office wall or any framed pictures of a wave-tossed beach. So when Warren Funk says "I surf fast," he doesn't mean he's entering a long-board competition. Rather, Funk, director of Jefferson Lab's Institute for Superconducting Radio Frequency Science and Technology, or ISRFST, is offering a memorable verbal shorthand for the Institute's acronym.

Funk assumed directorship of ISRFST April 1, appointed by JLab associate director Swapan Chattopadhyay. He receives support from ISRFST's new deputy director and chief radio-frequency (RF) scientist, Robert Rimmer, recently arrived from Berkeley, and assistant director Charlie Reece.

"I'm very excited. I'm working with a terrific, very talented, very resourceful group of people," Funk says. "We have a lot on our plates, but I'm thrilled with the opportunity we have. I'm walking around talking to people, getting to know faces and names. I'm meeting people in their workspaces. I need to get my arms around what people are doing, so I understand how best to deploy the resources we have to meet our commitments."

The Institute's staff are housed in the Test Lab, the site of what used to be known as the Superconducting Radio Frequency Department. ISRFST was formed as one of the Lab's centers of excellence, to preserve and enhance one of the Lab's core competencies, and to clearly establish it as a world leader in superconducting radio frequency (SRF) technology. The Institute intends to make

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Members of the JLab team that produced the prototype SNS cryomodule pose proudly with their creation after celebrating the milestone with ISRFST Director Warren Funk!

Funk accepts ISRFST directorship...



Warren Funk pauses for a quick photo after an April 22 meeting with ISRFST and engineering department staff and several other Lab employees to celebrate the completion of the prototype medium-beta cryomodule for the SNS.

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SRF, microwave and accelerator innovations widely available to other laboratories in the United States and abroad, as well as to the private sector.

“The SRF group here is internationally recognized,” Funk says. “My thrust is to make sure we don’t lose that. I want us to continue to play a role in the development of this technology worldwide. We’re a national and international resource.”

In the short run, Funk says the top item on his priority list is safety. Over the past several months, three mishaps have marred what is otherwise an enviable safety record. Although the injuries in all three cases were relatively minor and none permanent, Funk says even one mishap is cause for serious concern, and should not be tolerated because of the potential for serious damage.

“We had some nasty shocks this spring,” he says. “Fortunately nobody was seriously injured. They were wake-up calls. That’s why I think we need to refocus on safety.”

As part of JLab, the Institute is currently involved along with other federal laboratories — including Argonne, Brookhaven, Lawrence Berkeley, Los Alamos and Oak Ridge — that are participating in the design, engineering and construction of the \$1.4 billion Spallation Neutron Source (SNS) in

Oak Ridge, Tenn. The SNS will provide the most intense pulsed-neutron beams in the world for scientific research that is expected to have broad and significant impacts.

The SNS will produce pulses of neutrons every 17 milliseconds, with more than 10 times more neutrons than are produced at the most powerful pulsed-neutron sources currently available. Like water spraying from a rock washed by a garden hose, neutrons from a beam will scatter from a target material in a way that reveals that material’s structure and properties. As at JLab, SRF techniques and advanced cryomodule design will be incorporated within the SNS accelerator complex to enable low-cost, high-efficiency operation.

Group tackles upgrade work

Equally important is cavity prototyping work the group is doing for Jefferson Lab’s 12 GeV upgrade, and for the proposed Rare Isotope Accelerator (RIA). Work is underway to develop cavity field gradients of more than 20 MeV per meter (energy delivered to the particle beam), and to perfect the sophisticated RF control systems managing the phase and amplitude of the cavities’ electromagnetic fields.

The cavities comprise the innermost components of the electron accel-

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The most important ingredient in the continued success of our laboratory is that each and every one of us strives for the best performance we're capable of. As we approach that goal and produce noteworthy results it becomes very important to let the world know about our achievements and solicit feedback on our performance. There are many venues for such communications, and reviews are one of them, particularly when we communicate to the funding agencies.

Since I wrote to you last month, Lab management and scientific leaders have stepped up preparations for three upcoming reviews, and I would like to take this opportunity to share a little about each of them with you.

First on the horizon and very important to the contract metrics against which we are rated is the annual Science and Technology Review scheduled for July 15-17, 2002. This review consists of a panel including nuclear physicists, users, and accelerator and free-electron laser (FEL) experts chaired by Dr. Brad Tippens, the Manager of the Hadron Physics program in the Nuclear Physics Office within the Office of Science. The review examines all of our science and technology performance metrics: first and foremost the quality, relevance, and performance (schedule, productivity) of the Lab's experimental and theoretical nuclear physics program, but also how accelerator operations support research productivity, the quality and responsiveness of user service and interactions, the significance and merit of accelerator R&D, FEL status/performance, and our contribution to the Spallation Neutron Source (SNS) project.

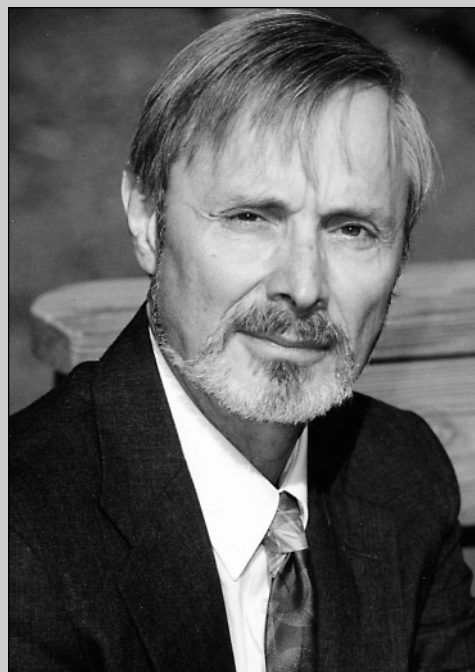
Then, Dr. Raymond Orbach (pronounced Or-back), the new Director of the Department of Energy's Office of Science, will make his first official visit to the Lab to lead the DOE's on-site review of the Lab's Institutional Plan. Originally scheduled for early July this review is now planned to take place August 19-20. As you know, the Office of Science comprises a basic research portfolio of roughly \$3 billion

including the operation of most major user facilities. During his visit, Dr. Orbach will have an opportunity to tour the Lab and learn about the science, technology, and future plans of Jefferson Lab in addition to meeting with local officials.

Preceding this review we will be updating the Lab's five-year "Institutional Plan". This is a DOE required document that states explicitly what the Lab is planning to do over the next five years. The most recent version of the IP can be found at www.jlab.or/media_relations/InstPlan/IP.pdf and everyone at the Lab is encouraged to read it. This document is one of the formal ways in which we report to DOE on the Lab's progress and its long-range strategic plan.

Finally, the Lab's Institutional Management Review is set to take place Oct. 22-23, 2002. This biennial review looks at the "big picture" of how the Lab is performing, particularly how Lab management discharges its duties. The scope of the review focuses on the categories of strategic planning, organizational culture and managerial effectiveness. The review panel includes chairs from other major reviews, international leaders in physics, chief administrative officers, and industrial scientists. This review is viewed as particularly important as it evaluates the overall effectiveness of Lab leadership and management.

These reviews bring to the forefront that our work is measured against a contract held with the Department of Energy with agreed upon metrics. Through the dedicated work of Lab staff our past Institutional Plans, Institutional Management Reviews, and Science and Technology Reviews have resulted in outstanding marks. These are very important reviews that affect the Lab's standing very directly and Lab management takes each of them very seriously as we strive to maintain and build upon the high past achievements. Your continued professionalism, expertise, and dedication to excellence are essential to the Laboratory's success and I thank you for your many contributions.



Christoph Leemann
Jefferson Lab Director

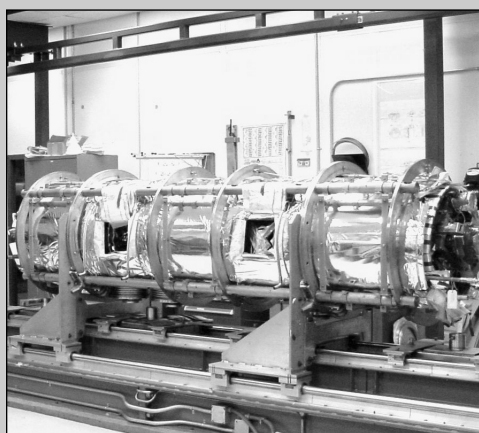
Three critical reviews on Lab's horizon

From the Director



Photo by Jim Richmond, ORNL

SNS update



The prototype SNS cryomodule under construction in Jefferson Lab's Test Lab. Pictured is the multi-layer insulation cold mass, supported by the space frame (the open structure of horizontal bars and vertical circles). This assembly fits into the vacuum vessel.

A recent shot of the SNS construction site. The Earth's curvature is factored into the construction of the linear accelerator tunnel, shown in the foreground.

Jefferson Lab continues to make good progress in building the superconducting linac section of the Spallation Neutron Source — a Department of Energy laboratory being built in Oak Ridge, Tenn., that will provide the world's most intense pulsed-neutron beams for scientific research and industrial development.

Employees throughout the Lab contributed to meeting a major production milestone at the end of April, namely the transfer of the completed medium-beta cryomodule prototype from the cryomodule assembly area to the test cave. This had been scheduled to take place May 31! Several months of testing to validate design and performance of cryomodule components and systems is now underway.

Meanwhile at Oak Ridge National Laboratory, construction is underway.

Charlie Horak, from the SNS Publications Office in Oak Ridge, gathered the following tidbits, which were recently published in ORNL's newsletter "The Reporter":

- Project structures will call for approximately 80,000 cubic yards of concrete, equivalent to a sidewalk three feet wide and about 400 miles long.
- The target building's deep foundation contains 937 concrete pilings, reinforced with steel pipe. These

pilings range from 35 to 181 feet deep.

- The initial concrete pour for a portion of the target building foundation required 78 loads of concrete, which were delivered to the construction site at a rate of one truck every three minutes.
- When completed, the target building will weigh as much as a conventional 40-story building of the same footprint.
- The SNS is being constructed on a mammoth building site on a ridgetop in East Tennessee, buzzing with cranes, concrete trucks and hard-hatted workers.
- Nearly 1.4 million cubic yards of earth will be moved by the time facilities construction is completed.
- 5,500 tons of rebar (reinforcing steel rods) will be used for project structures.
- SNS electrical substation capacity — at 70 megawatts — is enough to supply electrical service to about 35,000 homes.
- When the facility is complete in 2006, an estimated 2,000 researchers a year will use the SNS to study materials that will form the basis for new technologies in telecommunications, manufacturing, transportation, information, biotechnology and health.

New ISRFST director...

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erator's complex of cryomodules. Each cryomodule is a three-part system, which includes the cavities, a cooling tank of liquid helium and a Thermos-bottle-like structure known as a cryostat. The cryostat provides insulation to allow the cells to remain cooled to two Kelvin, or nearly absolute zero. Currently, 40 cryomodules are active in the CEBAF linacs. For JLab to achieve its goal of 12 GeV, planners will need to fully exploit the accelerator's total capacity of 50 eight-cavity modules in the linacs, plus several more in the injector region.

The Institute is developing a priority list of projects for the medium and long term. They include providing technical assistance to accelerator programs envisioned or already underway, in the United States, Europe and Japan. Funk also believes that his experts will develop commercial spinoffs of the cavities used in JLab's Free-Electron Laser (FEL). But he doesn't intend to steer the Institute in a commercial direction.

"In the long run, we don't want to be a production shop," Funk says. "Industry is the place to find people whose strengths are in manufacturing and production. Our strength is one-off engineering. We want to focus on research, design and prototyping."

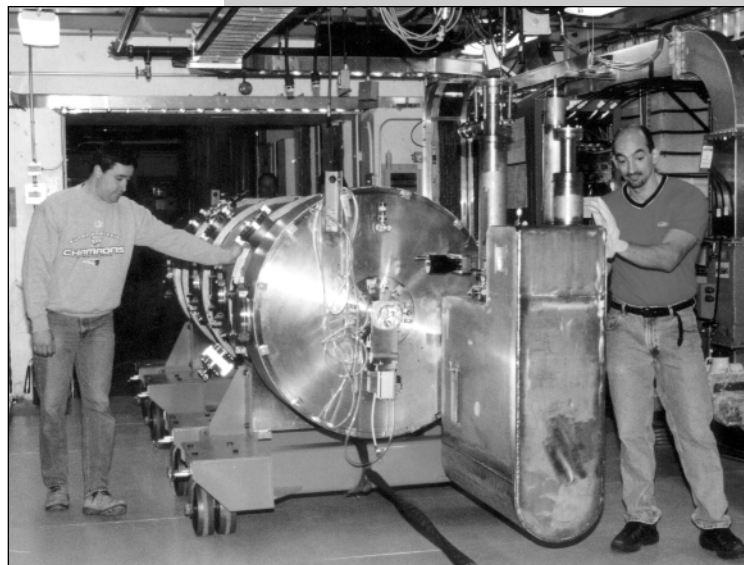
Institute researchers push state-of-art envelope

ISRFST researchers will be examining means of making continuing technical improvements to SRF accelerating cavities, focusing on cavity fabrication and processing, as well as critical assembly processes and techniques. The program will determine fundamental technology limitations on superconducting accelerator structures; and existing technology will be systematically developed to increase both the accelerating gradient and cavity quality factor while decreasing existing cavity inefficiencies. Supporting these efforts will be accelerator-physics modeling experiments, conducted to deepen the understanding of higher-order modes and beam dynamics in superconducting accelerators with and without energy-recovery systems.

ISRFST specialists also hope to assess the potential of, and develop accelerator structures from, superconducting materials with fundamental properties superior in some ways to niobium; measure the limitations on accelerator performance imposed by beam breakup and higher-order-mode losses; and develop SRF accelerating structures that minimize these limitations.

"We want to reemphasize our contributions to superconducting radio frequency technology," Funk says. "To support that we're reactivating a small research and development program that will look at issues related to the fundamental aspects of RF performance, specifically with niobium cavities. We want to be able to address fundamental [technological] limits in an actual application."

ISRFST is financially supported by the Lab's DOE nuclear physics and DOD Free-Electron Laser (FEL) programs, with additional funding assistance from the Department of Energy's Basic Energy Sciences Division of the Office of Science for work being conducted on SNS. Additional DOE funding is also being sought.



Dave Bigelow (left), Accelerator Engineering installation vacuum group, joins Frank Humphry, ISRFST, in rolling the prototype SNS cryomodule into the refurbished test cave to begin checkout.

Hungry magnet, detector package will feed on subatomic particles in Hall A



BigBite collaborators stand in Hall A in front of the BigBite magnet. JLab staff scientist Douglas Higinbotham (above, left to right); Pierre Moussiegt, Ph.D. student from the Institut des Sciences Nucléaires in France; Assistant Professor Nilanga Liyanage, University of Virginia; Senior Scientist Vladimir Nelyubin, St. Petersburg Nuclear Physics Institute, Gatchina, Russia; and JLab physicist Bogdan Wojtsekhowski, are just a handful of the scientists working to prepare BigBite for upcoming experiments.

by James Schultz

Anything over eight feet tall, six feet wide and weighing over 20 tons might be expected to have a healthy appetite. But no traditional foods are ingested by this behemoth. For the BigBite magnet, the nourishment of choice is subatomic particles, and lots of them. The BigBite spectrometer, which consists of the magnet along with its detectors, will be able to discern scattered particles over a range of energies and angles far greater than can be obtained with the other spectrometers used in Jefferson Lab's Hall A.

BigBite is the latest addition to the Jefferson Lab family of particle detectors. It comes via the Netherlands' National Institute for Nuclear and High Energy Physics, NIKHEF, in Amsterdam which commissioned the magnet's construction by Russian scientists in 1994. When the NIKHEF accelerator ceased operations in 1999, the institute sold the magnet to Jefferson Lab. The magnet was stored until, with the approval of a trio of Hall A experiments, researchers began refurbishing the magnet and building the associated particle detectors.

"BigBite will be able to work with the Hall A high resolution spectrometers

or stand alone," says Douglas Higinbotham, the Hall A staff scientist who is coordinating the BigBite project. "There are three upcoming experiments that will definitely put BigBite through its paces. Four other experiments, proposed but not yet approved by the Lab's program advisory committee, also wish to use BigBite."

Unlike the other Hall A spectrometers, BigBite has no focusing properties. While this allows BigBite to easily detect particles over a large range of angles and energies, the lack of focusing means BigBite will not be able to determine these quantities as precisely as the high resolution, small-acceptance Hall A spectrometers. For the approved BigBite experiments, large angular and energy coverage with moderate resolution is exactly what is required.

The precise fit of the BigBite in Hall A will be tight, since researchers require that the magnet be located one meter from the Hall's scattering chamber. The scattering chamber is where the Lab's electron beam collides with targets and the out going particles are produced. The placement of BigBite will require the construction of a spe-



Doug Higinbotham with the BigBite magnet. He first used BigBite for his doctoral thesis when it was operating at NIKHEF.



Lee Broecker takes a break from conducting diagnostic work on electronic components in the north linac service building.

as told to Judi Tull

I was born in Seoul, Korea, but I've lived in the United States since 1985. I met my husband, Michael, when he was stationed in Korea with the U.S. Air Force.

Growing up, I was always interested in engineering and math, but my parents thought there was something wrong with me because I wanted to do things girls didn't do. I remember when I was about seven years old, I took a radio apart to see how it worked and where the music came from. I even kept my own set of tools so I could explore things.

But, in Korea, no one encouraged me to pursue my ambition, which was electronics or engineering. So, I worked at a number of different jobs, including as a waitress and in the local police department. My brothers got all of the encouragement that I didn't. Now, one is an engineer, another a computer scientist.

When I came to the U.S., my husband encouraged me wholeheartedly to go to school and follow my dreams. So I went to Thomas Nelson Community College to begin my studies in electronics. I knew then that I'd found what I truly love, electronics!

While I attended school, I was fortunate to be able to work at NASA as a co-op student in the Fabrication

department. I received very thorough and vigorous training while working there; that has helped me a great deal in pursuing my career.

I graduated from TNCC about six years ago, and was lucky enough to land a job here at Jefferson Lab. That was a thrill! This is truly a country of opportunity. My job in the Accelerator Division's Accelerator Electronics group is to maintain the DC power system for the accelerator. It controls the alignment and focus of the beam. It's very, very precise work, and I love it. We developed and pioneered the processes and procedures used for the trim card calibrations.

I really love my work and I'm pleased with the position that I have as the lead technician for the DC power team. Since I live in York County just a few minutes away, I am called on after hours to troubleshoot the system, and I'm proud of that. The pressure is really on if there's a problem, because it costs thousands of dollars for every hour the accelerator is down, so troubleshooting is what it is all about. I don't hope for problems, but that is when I learn the most and when I feel I am really doing my job.

I am excited about the future of Jefferson Lab. We have some important and interesting work coming up in

In their own words

with
Lee
Broecker

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JLab/HU partnership creates CAMI Lab



Telly Green and Jennifer Velez, Hampton University graduate students, prepare to do medical instrumentation work at the joint JLab/Hampton University CAMI Lab, room 323, in the Applied Research Center.

New medical instrumentation center to capitalize on detector technologies

by James Schultz

No self-respecting Star Trek physician would ever beam down to an alien world without the one piece of equipment essential to 24th century medicine. Because without a medical tricorder, she wouldn't know what's wrong or how to cure it. Then there are the benefits: no cutting, no bleeding, and fast and reliable diagnosis.

Cynthia Keppel, a Hall C staff scientist and director of Hampton University's new Center for Advanced Medical Instrumentation, says although we're in a new millennium we're not quite yet to the tricorder level. Still, the creation of the Center — also known by its acronym CAMI — could lead to development of an unprecedented array of portable, handheld, non-invasive diagnostic devices based on detector technologies refined at Jefferson Lab. Keppel traces CAMI's genesis to informal discussion she and JLab Detector Group head Stan Majewski had beginning in the mid-1990s.

"Without the Lab there would be no Center," Keppel contends. "CAMI's existence is largely due to Hampton University partnering with JLab for

medical instrumentation [projects]. The Detector Group pushes the state of the art and we leverage that expertise from one field to another. It's not just bouncing radiation off particles. It's understanding the interaction of radiation with matter, human or otherwise."

Such collaborations have led to the development of compact gamma cameras — adaptations of the sensitive gear used in the Lab's experimental halls to detect subatomic particles — that can identify cancerous breast lesions that traditional mammograms have trouble differentiating from healthy breast tissue. The CAMI/JLab partnership has also worked on intra-operative surgical probes for melanoma surgery and a small, stereotactic breast imager that works in conjunction with mammograms to improve identification of suspicious lesions prior to biopsy. That device is currently being evaluated in clinical trials and thus far, based on confirming biopsies, has demonstrated a high success rate in pinpointing what is benign and what is malignant.

Both devices rely on injectable solutions of radiopharmaceuticals,



Cynthia Keppel
JLab physicist and
Hampton University
CAMI Director

which are drugs that are labeled with radioactive isotopes. As the solution circulates throughout the body, it tends to accumulate in malignant cells. The congregated radiopharmaceuticals emit gamma-rays, which are sensed as light by the devices and then converted into electronic signals that can be rendered as a visible image.

“What we will be looking to do is develop minimally invasive instrumentation,” Keppel says. “We want to be able to locate and diagnose cancers more effectively. Everything coming out of the Center, at least in the immediate future, will be focused on finding better ways to locate or image those radiopharmaceuticals.”

Eastern Virginia Medical School (EVMS) in Norfolk will be joining with CAMI to establish a graduate program in medical physics. It will be the first such program in Virginia, and the first in the country at an historically black college. Any devices resulting from the collaboration will be evaluated both nationally and in clinical programs conducted at Tidewater-area hospitals.

Keppel is in the process of writing proposals that would fund Center per-

sonnel in medical physics, engineering and applied technology. In addition to five students and two part-time administrative assistants, Keppel expects up to 10 individuals from Hampton University, the Lab, and EVMS to staff CAMI. “We pool expertise in one place and we get the word out,” she says. “The idea is to become an international resource for medical physics and to invite physicians, companies and patient advocacy groups to partner with us.”

Groundbreaking for a new CAMI research facility on campus at Hampton University is scheduled for later this spring. When complete in

2003, the Center will enclose 12,000 square feet in two stories, housing primarily research labs and classrooms, but also some office space. Eventually, outpatient areas may be added.

Additional innovation may lead to hand-held wireless devices that could do away with the thick cables now required for connection and operation. The Trek-like tricorder is not that wild of an idea, Keppel says. It’s entirely feasible that, eventually, diagnostic devices could be completely non-invasive. “We have this technology and this knowledge,” she says. “We should share it and help people. We can make a difference and, I think, quickly.”



Jennifer Velez, Hampton University graduate student, tests surgical probe electronics.



Jennifer Velez and Telly Green, Hampton University graduate students, use a caliper to review surgical probe data.

Lab enhances site-wide wireless network capabilities

The wireless network at Jefferson Lab has recently been significantly enhanced, according to Michael Memory, JLab Network coordinator. The wireless network was beefed up to provide additional avenues of access to computing resources and to extend network access to locations where it would otherwise remain unavailable.

The wireless network is not viewed as a replacement for our existing network. It is simply a convenience for our mobile users, Memory explains.

The following areas are currently under wireless network coverage and are supported by the Computer Center: the Help Desk area and room 84 in Trailer City (building 16), the 1st and 2nd floor of the Counting House, Hall C, and most of CEBAF Center.

The Computer Center currently supports wireless setups for Windows NT/2000 and Red Hat 6.2 with Cabletron/Enterasys wireless network cards only, Memory points out. Any 802.11 compliant wireless network cards should work. For those interested in setting up wireless for these plat-

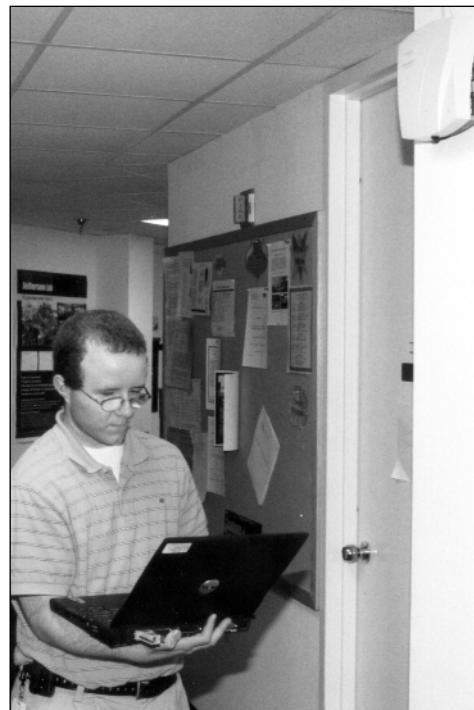
forms, Memory suggests going to <http://cc.jlab.org> for more information.

Due to budget constraints the Computer Center's expansion of the wireless network will be minimal, he explains. Some groups around the Lab have opted to pay for the Wireless Network Access Points deployed in their work areas. These access points are chosen, setup, and managed by the Computer Center. Some areas where wireless connectivity will be expanded later this year, due to the purchases of various Lab groups, include all of CEBAF Center, the Test Lab (building 58), and areas in the FEL not covered by the Accelerator Computing Environment (ACE) team.

"If your group would like to purchase wireless equipment," Memory advises, "contact the Computer Center first. Wireless Network Access Points cannot be connected to the JLab network without prior approval from the Computer Center."

Requests for temporary wireless network connectivity for meetings and conferences can be fulfilled so long as they are made with about two weeks notice. Such requests are evaluated on a case-by-case basis, according to Memory. To request these services, send a CCPR (Computer Center

Problem Report) via the computer center web page <http://cc.jlab.org> under the subject Network Service Request. "That will get it to the right people," Memory says.



Justin Smith, JLab Networking student employee, tests a wireless access box (upper right) in CEBAF Center.

Hall A's BigBite...

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cial platform and cantilevered arm so that the spectrometer can be maneuvered into position for operation. Also, the observational window in the Hall's scattering chamber will need to be enlarged to accommodate BigBite's large angular view.

"The project," says Higinbotham, "wouldn't be possible without the ongoing and substantial support from institutions and universities worldwide that are contributing equipment and personnel." The Massachusetts Institute of Technology has a graduate student and a post-doctoral research

scientist stationed at Jefferson Lab working full time on the project. Tel Aviv and Glasgow Universities are building the particle detectors needed for the first experiment and the University of Virginia is working on the more precise detectors required for the subsequent experiments. The University of Virginia is collaborating with Florida International and California State Universities to develop the new scattering chamber and target systems.

"Without user support this project couldn't be done," Higinbotham

asserts. "It's very much an international effort. And as more experiments are proposed, the project has been gaining collaborators willing to help with the construction effort. The number of new proposals has been very encouraging. The project is feeding on itself."

BigBite is scheduled for installation in Hall A by late fall this year. Testing and commissioning will follow. If everything progresses as planned, the first of the three approved BigBite experiments should commence in fall 2003.

Remember to use new pager '584' prefix

At the end of January, Metrocall completed the changeover to the Lab's new pager prefix and numbers, according Dawn McGinnis, telecommunications assistant. "Metrocall became our vendor in January 2001," McGinnis explained, "however, we couldn't transfer our old pager prefix and numbers to the new vendor, so Metrocall had to assign interim pager numbers to everyone until a new prefix opened up so we could again get our pager numbers to match with our extension numbers."

The Lab's new pager prefix is "584." More than 80 percent of the Lab staff that carry pagers may now be paged by dialing 584 and their office, four-digit extension. "For many of us this means pager numbers will be much easier to remember and we'll have to spend less time looking up pager numbers," McGinnis points out. "To make the transition less confusing, you might want to peel your old pager-number label off of the back of your pager. Stop by my office and I'll

print out a new label for your pager, complete with the new prefix and your new pager extension."

The electronic phone book on the Web page www.jlab.org/contact.html is current and the Lab's Environmental, Health & Safety Manual reflects the correct pager numbers.

McGinnis reminds everyone carrying JLab pagers that they may turn in lost pagers and pager parts to her office, room 194, building 16.

BEAMS earns national acclaim at conference

Jefferson Lab's Science Education program BEAMS — or Becoming Enthusiastic About Math and Science — recently earned national acclaim.

It was one of 50 programs showcased at an international conference dubbed "Communicating the Future: Best Practices for Communication and Technology to the Public." The U.S. Department of Energy's Office of Science, the National Institute of Standards and Technology, and the U.S. Department of Commerce hosted the event.

Nearly 330 programs, from all over the world, were submitted for recognition during this first-of-its-kind event, according to Jan Tyler, JLab Science Education program manager. "We were delighted to have BEAMS recognized as one of the top 50," she said. BEAMS was one of three DOE programs recognized at the event.

Tyler and Linda Ware, Lab Public Affairs manager, attended the two-day conference, held in Gaithersburg, Md., in March. Tyler participated in a panel discussion on reaching at-risk students and a poster presentation revolving around communicating science to hard-to-reach audiences.

Hall D has new web site

Jefferson Lab's proposed Hall D collaborators have a new name (GlueX), logo, web site and poster. Visit www.gluex.org to check out the web site or to download the poster. Learn about this international collaboration and what they hope to learn by building this state-of-the-art experiment facility at JLab.

In their own words with Lee Broecker...

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the next few years. I feel fortunate to be a part of that.

I'm continuing my education and feel very lucky about that. The Lab pays for my tuition and my books. Right now I'm taking systematic troubleshooting, and I'm the only woman in the class. (Electronics is still very much a man's world). When I first started this class, the instructor singled me out and was very concerned that I had taken the proper math and electronics courses to prepare me for the work in his class. So far, I have an "A" in it. I'm going to continue taking classes so I can do my job even better, and maybe eventually become an electronics engineer.

Working at Jefferson Lab is such a great opportunity for me. In my group there are approximately 30 people, three of us are women.

I don't have much spare time, since I have a 14-year-old son, Hanmo, and I often help my husband on weekends and during the holidays at his business, Mail Boxes Etc., in Hampton Town Center. He's retired from the Air Force now.

I've had the chance to do some traveling in the United States. I've been to Seattle, Chicago, St. Louis, Tampa and New York City among other places. I liked New York — it reminded me of Seoul, but a couple days there was enough! I love Virginia. It will always be my home.

I'm still surprised at how friendly and well-mannered Americans are, and how they say "hello" to strangers. It's a very different culture. And the fresh air! Wow! Everywhere I have been is so beautiful. When my parents came to visit from Korea they were amazed

at the green lawns and all the wide-open spaces. They wondered why Americans were not using that space to grow vegetables. Korea is very crowded and uses most all open space to grow food.

Studying English is mandatory in middle school in Korea since it is considered an international language. So I've been speaking it for a long time. But of course I didn't speak it fluently until coming to the U.S. I still struggle with it a bit, and want to be able to speak it better. Especially, since my job involves verbal communications as well as computer skills and data base work. I want to excel.

All in all, I'm a very happy person. I'm doing work that I love with people I enjoy, in a country that I think is just wonderful, with a family that supports me. What a country!

Science Education

Web site sets several high-use records during April, May

April and May have been busy months for the Lab's Science Education web site, according to Steve Gagnon, JLab Education technician.

"We had our first 100,000-page day April 11," Gagnon reports. "Just over 114,000 pages were viewed in a 24-hour period. It was pretty exciting; up until that point our record was 89,000 pages viewed in a single day."

But that was just the beginning! On April 18, the web site broke its new record with nearly 125,000 pages accessed. The record was shattered April 22, 23 and 24, with 148,436 followed by 149,989 and finally 182,257 pages viewed on each of the consecutive days. "April proved to be our best month ever with nearly 2.5 million pages viewed," he adds. "Then May 2 brought yet another new record with 198,439 pages being accessed."

"It has been great to see the level of use the site has received recently," Gagnon comments. Most of the pages accessed were from the web site's Virginia Standards of Learning Science, Math and Technology Practice Tests and the 'Who Wants to Win \$1,000,000 Math and Science Quiz.'


The SOL practice tests provide students, teachers, parents — or anyone interested in the information — access to math, science and technology practice tests for various education levels. The web site is set up so a person can request 10, 15, or 20 multiple-choice questions from a single category.

"We expected use of the SOL pages to climb in the spring as the annual testing period starts, but we've been amazed with the amount of use the practice test pages are receiving,"

Gagnon says. "The other hot spot on the Education Web page is the 'Who Wants to Win \$1,000,000 Math and Science Quiz', which is also a fun way to review math and science information — even though contestants aren't playing for real money."

"Use of the Education web site has mushroomed. It was six years after bringing the site on-line before we hit 10 million pages," he explains. "The second 10 million pages were accessed in seven months."

To check out the Jefferson Lab Education web page, visit <http://education.jlab.org/>. To access the SOL practice tests or to play the \$1,000,000 math and science quiz, click on the Games & Puzzles icon.




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